

## CLAIMS

1           1. A device comprising:  
2           a mobile embedded device having a cursor manipulator including,  
3           the cursor manipulator including,  
4           a sensing surface operative to sense contact by the human finger,  
5           the contact corresponding to applied pressure,  
6           a pressure sensor array disposed on the sensing surface, wherein a  
7           measurement of the plurality of pressure sensors corresponds to an image,  
8           and  
9           an image detector, receiving images from the pressure sensor  
10          array, generating cursor manipulation corresponding to changes between  
11          the images.

1           2. The device, as defined in claim 1, wherein the cursor manipulation corresponds  
2          to planar directional movement.

1           3. The device, as defined in claim 1, wherein the cursor manipulation  
2          corresponds to data entry.

1           4. The device, as defined in claim 1, the image detector including:  
2           a controller;  
3           a multiplex driver, transceiving data from the controller;  
4           an image array, receiving data from the multiplex driver;  
5           sense amplifiers, connected to the image array, transceiving data from the  
6          controller;  
7           a port transceiving data with the controller;  
8           current read access memory (RAM) connected to the sense amplifiers;  
9           reference RAM, connected to the current RAM;  
10          a predictor;  
11          a cross-correlator receiving data from the current RAM, reference RAM, and the  
12          predictor; and

13           an interpolator, receiving data from the cross-correlator, transmitting data to the  
14 predictor and the controller.

1           5. The device, as defined in claim 1, wherein the mobile embedded device is  
2 selected from a group comprising personal data assistants and cellular phones.

1           6. A system for providing cursor manipulation when using a human finger  
2 comprising:  
3           sensing surface operative to sense contact by the human finger, the contact  
4 corresponding to applied pressure;  
5           a pressure sensor array disposed on the sensing surface, wherein a measurement  
6 of the plurality of pressure sensors corresponds to an image; and  
7           an image detector, receiving images from the pressure sensor array, generating  
8 cursor manipulation corresponding to changes between the images.

1           7. The system, as defined in claim 6, wherein the cursor manipulation corresponds  
2 to planar directional movement.

1           8. The system, as defined in claim 6, wherein the cursor manipulation  
2 corresponds to data input.

1           9. The system, as defined in claim 6, the image detector including:  
2 a controller;  
3 a multiplex driver, transceiving data from the controller;  
4 an image array, receiving data from the multiplex driver;  
5 sense amplifiers, connected to the image array, transceiving data from the  
6 controller;  
7 a serial port transceiving data with the controller;  
8 current read access memory (RAM) connected to the sense amplifiers;  
9 reference RAM, connected to the current RAM;  
10 a predictor;

11           a cross-correlator receiving data from the current RAM, reference RAM, and the  
12 predictor; and  
13           an interpolator, receiving data from the cross-correlator, transmitting data to the  
14 predictor and the controller.

1           10. A method for finger navigation comprising:  
2           sampling a portion of an array of pressure sensors to generate a first sample;  
3           re-sampling the portion of the array to generate a second sample; and  
4           comparing the first and second samples to determine navigational movement.

1           11. A method, as defined in claim 10, wherein the portion is a subset of the array.

1           12. A method, as defined in claim 11, wherein the subset is a periodic selection  
2 of pressure sensors.

1           13. A method, as defined in claim 11, wherein the subset is a region of pressure  
2 sensors.

1           14. A method, as defined in claim 13, wherein the region has an area comparable  
2 to a fingerprint.

1           15. A method, as defined in claim 13, wherein the subset further comprises a  
2 second region of pressure sensors.